

## **REMARKS**

### **I. Status of the Application**

In the Office Action dated May 2, 2007, the Examiner finally rejected claims 1-16 under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious under U.S. Patent No. 5,576,356 to Leir et al. ("Leir"). Claim 4 is canceled. Therefore, claims 1-3 and 5-16 remain at issue.

Initially, claims 1-16 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims have been amended to accurately reflect the coating is treated with heat and optionally high velocity air prior to curing with radiation. Applicants submit no new matter is being submitted with these amendments, and the amendments are fully supported by the specification.

### **II. Rejection In View of Leir Under 35 U.S.C. §102(b) or in the Alternative, Under 35 U.S.C. §103(a)**

Claims 1-16 stand rejected under 35 U.S.C. §102(b) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious in view of Leir. Claim 4 is canceled. In order for a reference to act as a §102 bar to patentability, the reference must teach each and every element of the claimed invention. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771 (Fed. Cir. 1983). Without the required teaching of "each and every element" as set forth in the claims, it is improper to maintain such rejections under §102(b). Leir does not teach each and every element of the claimed invention, and thus fails as an anticipatory reference. Similarly, Applicants' invention is also not obvious in view of Leir.

Leir et al. describes a radiation cured silicone release coating from solutions of relatively low levels of a polyorganosiloxane substituted with small amounts of reactive functional groups dissolved in a co-reactive monomer or mixture of monomers and containing a photoactive catalyst (col. 4, lines 25-29). The reactive diluents used in Leir have sufficiently high boiling points above about 100°C and preferably above about 150°C so as not to evaporate from the substrate before curing (col. 7, lines 12-18). Leir discusses the preparation of "solventless" epoxysilicone containing compositions to make the release silicone coatings (Examples 33 and

34); however, these preparations are not the same as the present invention in which an organic solvent is used.

The present invention is directed to release liners. In the invention, a radiation curable silicone release agent is dispersed in an organic solvent and then applied onto the surface of a substrate. The coated substrate is exposed to active conditions sufficient to remove the solvent. In particular, the coated substrate is heated optionally in the presence of high velocity air. The substrate is then exposed to radiation to cure the silicone release coating. The result is a release liner having significantly reduced amounts of undesirable components, such as reduced total silicone extractables (measured as micrograms/square cm) and/or volatile silicone compounds (measured in ppm). Preferably, the release liners of the invention have no more than about 10 parts per million and more preferably less than about 2.0ppm of volatile silicone compounds in the cured product (see specification at p. 2). This release liner, having the specified properties of reduced total extractables and/or volatile organic compounds, is not taught or suggested by Leir et al.

In the Office Action, it is stated that Examples 33 and 34, although specifically stated as “solventless,” use a reactive diluent, which could be considered an organic solvent. This comparison, however, is incorrect. The reactive diluent is described as “having a sufficiently high boiling point above 100° C, preferably above about 150° C., so as not to evaporate from the substrate before curing.” (col. 7, lines 13-18). Applicants submit that, contrary to the statement in the Office Action, a “reactive diluent” is not the same as an “organic solvent.” Leir does not treat them as one in the same. The assumption that the “reactive diluent” specifically used in the “solventless” examples of Leir, and relied upon in the Office Action, is the same as the organic solvent in the present invention, is incorrect. Thus, given the differences in the preparation of the coating in Leir, using a reactive diluent, and the present invention, using an organic solvent, inevitably also results in a different product. The resulting product in Leir is a substrate, a reactive diluent and silicone, whereas the resulting product in the present application is a substrate and silicone.

The organic solvent of Applicants’ invention, which has a lower boiling point than the reactive diluents described in Leir, is desired in the present invention because after application of the silicone coating to the substrate, the organic solvent is driven off through the application of heat, and optionally high velocity air, and then the coating is cured with radiation. Thus, not

only is the solvent driven off as planned, but also the undesirable low molecular weight silicone cyclics. The lower boiling points of the solvent in the present invention is offered through the addition of the temperature limitation of “at least 200°F to drive off the solvent” in the present claims. The driving off of the low molecular weight silicone cyclics at this temperature is demonstrated through the results presented in Example 6 of the present application. It is clear, that because the reactive diluent used in Leir requires a much higher temperature, that the reactive diluent described in Leir would not work in the present invention. This heating step is what results in the final product having the low levels of undesirable extractables and outgassing silicone compounds in the present invention, because the act of driving off the solvent also drives off the low molecular weight silicone cyclics in the present application.

On the other hand, the admitted higher boiling point of the reactive diluents (above 150°C or 368°F) relied upon in the “solventless” examples of Leir **does not evaporate from the substrate before curing**. This appears to be contrary to the teaching of the present invention, wherein *the solvent is driven off* prior to curing, taking with it the undesirable extractables and outgassing silicone compounds. Applicants further note that the web exiting the tunnel in Leir is approximately 50°C (col. 16, lines 13-16), which is lower than Applicants’ web temperature of about 80°C. Again, it is the temperature driving off the solvent of Applicants’ invention that results in a product having a lower level of undesirable extractables. Therefore, Applicants submit that the “organic solvent” in their invention is not the same as a “reactive diluent” in the “solventless” systems of Leir, and the resulting products are likewise not obvious or inherently the same.

Applicants respectfully submit that their claims are not anticipated by or obvious in view of the Leir reference, and further the level of low molecular weight silicone impurities claimed and discussed in their resulting product, are not inherent. As discussed above, there are significant differences between the Applicants’ process and that of Leir et al., which results in the coating of the present invention comprising no more than about 1.5 micrograms per square centimeter total silicone extractables and no more than approximately 10 ppm volatile silicone compounds. The fact that Applicants apply the silicone release coating in an organic solvent, which is different than a reactive diluent, and then actively drive off solvent using heat, and optionally high velocity air, is what Applicants believe results in a product having low levels of extractables. The missing elements of extremely low levels of extractables is not necessarily

present in Leir, with this assertion being supported in the fact that there is no teaching or suggestion of this kind in Leir, and the differences between the reactive diluent of Leir and the organic solvent in the present application. Therefore, Applicants' claimed features of its release liner are not inherent from the teaching of Leir.

In view of the foregoing, Applicants have demonstrated that its process, and thus the resulting composition of the present invention, are different from that of Leir. Thus, Applicants respectfully request that the rejection under §102(b) or alternatively, under §103(a) be withdrawn with respect to Claims 1-3 and 5-16.

Applicants note the reference to U.S. Patent No. 5,258,480 to Eckberg et al. While this reference has not been officially cited in the present Office Action, Applicants respectfully submit that Eckberg would likewise not result in the same product as the present invention. The devolatilization process described in Eckberg is not efficient enough to remove the low molecular weight cyclics to meet the extractable levels referred to in the present invention. Therefore, Applicants submit that Eckberg is likewise not applicable to the present invention.

### III. Conclusion

In view of the foregoing, Applicants respectfully submit that claims 1-3 and 5-16 are patentable over the cited prior art, and are in condition for allowance. Applicants respectfully request that the Examiner reconsider and withdraw the rejections of the pending claims and enter an allowance of the same. Applicants further invite the Examiner to contact the undersigned attorney to discuss any matters pertaining to the present Application.

Respectfully submitted,

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By: Monique A. Morneault  
Monique A. Morneault, Reg. No. 37,893  
Customer No. 1923  
McDermott Will & Emery LLP  
227 West Monroe, Suite 4400  
Chicago, Illinois 60606-5096

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Sarah J. Goodnight  
Sarah J. Goodnight

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